

IFWO

RAW SEQUENCE LISTING

PATENT APPLICATION: US/10/827,498

DATE: 09/08/2004 TIME: 13:57:55

Input Set : N:\efs\10827498\AMBI1001.txt Output Set: N:\CRF4\09082004\J827498.raw

3 <110> APPLICANT: Ambion, Inc. Chen, Lianling 5 Setterquist, Robert Latham, Gary 8 <120> TITLE OF INVENTION: Recombinant Reverse Transcriptases 10 <130> FILE REFERENCE: AMBI:1001 12 <140> CURRENT APPLICATION NUMBER: 10/827,498 C--> 13 <141> CURRENT FILING DATE: 2004-04-19 15 <160> NUMBER OF SEQ ID NOS: 20 17 <170> SOFTWARE: PatentIn version 3.3 19 <210> SEO ID NO: 1 20 <211> LENGTH: 2037 21 <212> TYPE: DNA 22 <213> ORGANISM: Moloney murine sarcoma virus 25 <220> FEATURE: 26 <221> NAME/KEY: CDS 27 <222> LOCATION: (1)..(2037) 29 <400> SEQUENCE: 1 30 atg acc cta aat ata gaa gat gag tat cgg cta cat gag acc tca aaa 48 31 Met Thr Leu Asn Ile Glu Asp Glu Tyr Arg Leu His Glu Thr Ser Lys 10 34 gag cca gat gtt tet eta ggg tee aca tgg etg tet gat ttt eet eag 96 35 Glu Pro Asp Val Ser Leu Gly Ser Thr Trp Leu Ser Asp Phe Pro Gln 20 38 gcc tgg gcg gaa acc ggg ggc atg gga ctg gca gtt cgc caa gct cct 144 39 Ala Trp Ala Glu Thr Gly Gly Met Gly Leu Ala Val Arg Gln Ala Pro 42 ctg atc ata cct ctg aaa gca acc tct acc ccc gtg tcc ata aaa caa 192 43 Leu Ile Ile Pro Leu Lys Ala Thr Ser Thr Pro Val Ser Ile Lys Gln 44 50 55 46 tac ccc atg tca caa gaa gcc aga ctg ggg atc aag ccc cac ata cag 240 47 Tyr Pro Met Ser Gln Glu Ala Arg Leu Gly Ile Lys Pro His Ile Gln 70 75 50 aga ctg ttg gac cag gga ata ctg gta ccc tgc cag tcc ccc tgg aac 288 51 Arg Leu Leu Asp Gln Gly Ile Leu Val Pro Cys Gln Ser Pro Trp Asn 8.5 90 54 acg ccc ctg cta ccc gtt aag aaa cca ggg act aat gat tat agg cct 336 55 Thr Pro Leu Leu Pro Val Lys Lys Pro Gly Thr Asn Asp Tyr Arg Pro 56 105 110 58 gtc cag gat ctg aga gaa gtc aac aag cgg gtg gaa gac atc cac ccc 384 59 Val Gln Asp Leu Arg Glu Val Asn Lys Arg Val Glu Asp Ile His Pro 60 120 62 acc gtg ccc aac cct tac aac ctc ttg agc ggg ctc cca ccg tcc cac

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66	caq	taa	tac	act.	at.a	ctt	gat	tta	220	ant.	~~~	+ > +	++~	+~~		aga	
67	Gln	Trn	Tyr	Thr	Val	T.eu	Acn	Tou	Tue	300	900	Tyr	51	rge	ctg	aga	480
68	145		+ y -	1111	vai	150	Asp	пец	пув	Asp		Tyr	Pne	Cys	Leu	Arg	
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70	CLC	cac	CCC	acc	agt	cag	cct	ctc	ttc	gcc	ttt	gag	tgg	aga	gat	cca	528
71	Leu	His	Pro	Thr	Ser	Gln	Pro	Leu	Phe	Ala	Phe	Glu	Trp	Ara	Asp	Pro	
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78	LLC	aaa	aac	agt	CCC	acc	ctg	ttt	gat	gag	gca	ctg	cac	aga	gac	cta	624
79	Phe	Lys	Asn	Ser	Pro	Thr	Leu	Phe	Asp	Glu	Ala	Leu	His	Arq	Asp	Leu	
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83	Ala	Asp	Phe	Ara	Tle	Gln	Hie	Pro	Agn	Lou	T10	Leu	Tou	cag	m	gra	672
84		210		5		V-111	215	110	Asp	цец	TTE		ьеu	GIII	Tyr	vai	
	ant		++-									220					
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128	385	5				390)				39!	5				400	
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13:	l Asp	Pro	Val	Ala	a Ala	a Gly	7 Tr	Pro	o Pro	Cvs	s Lei	ı Ard	y Met	· Va	a god	Ala	1248
132	2				405	5	•			410		~ ··-;	,	- va.	415		
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			acq	cta	ctc			aat	~~~	~~~	475) - ~				480	
151	Pro	Ala	Thr	Leu	Len	Dro	Lou	Dro	Glu	gaa	999	ctg	caa	cac	aac	tgc	1488
152				шси	485	FIO	шeu	PIO	GIU			те т	GIn	His		Cys	
		gat	ato	cta		~~~	~~~	~~~		490					495		
155	Len	Asn	Tle	T.em	712	Clu	715	Cac	gga	acc	cga	ccc	gac	cta	acg	gac	1536
156	100	Tibb	110	500	Ата	GIU	Ala	HIS	Gly	Thr	Arg	Pro	Asp		Thr	Asp	
		cca	ctc		~~~	~~~	~~~	~~~	505					510			
159	Gln	Dro	LAU	Dro	yac	210	gac	cac	acc	tgg	tac	acg	gat	gga	agc	agt	1584
160	OIII	110	515	PIO	Asp	Ald	Asp	HIS	Thr	Trp	Tyr	Thr		Gly	Ser	Ser	
	ctc	tta		~~~	~~~	~~~		520					525				
163	T.e.i	Len	Cln	gay	gga	Cag	cgt	aag	gcg	gga	gct	gcg	gtg	acc	acc	gag	1632
164	L Cu	530	9111	Giu	GIY	GIII	Arg	ьys	Ala	GIY	Ala		Val	Thr	Thr	Glu	
	acc		at a	ata	+ ~~	~~+	535					540					
167	Thr	Glu	Val	TIO	Tes	90L	aaa	gcc	ctg	cca -	gcc	aaa	aca	tcc	gct	cag	1680
168	545	Ģīu	val	116	пр	ATd	ьуs	Ата	Leu	Pro		Gly	Thr	Ser	Ala	Gln	
		aat	<i>(</i> 727	at ~	2+2	550					555					560	
171	Ara	λla	Glu	Tou	Tla	yca 71-	T	acc	cag	gcc	cta -	aag	atg	gca	gaạ	ggt	1728
172	nig	AIG	Giu	шец	116	Ald	Leu	Thr	Gln		Leu	Lys	Met	Ala	Glu	Gly	
	224	224	a+ a	224	565					570					575		
175	Larg	Tre	Lou	aat Aan	yet wal	m	act	gat	agc	cgt	tat	gct	ttt	gct	act	gcc	1776
176	шуъ	цуз	шеu	FOO	vai	ıyr	Thr	Asp	Ser	Arg	Tyr	Ala	Phe		Thr	Ala	
	cat	ata	an t	580	~~~		.		585					590			
170	Uic	Tlo	Udl	gga	gaa	ata	tac	aga -	agg	cgt	<u>g</u> gg	ttg	ctc	aca	tca	gaa	1824
180	mrs	TIG	595	GTÀ	GIU	ire	Tyr	Arg	Arg	Arg	Gly	Leu	Leu	Thr	Ser	Glu	
	~~~							600					605				
102	ggc	dad	gag	atc	aaa	aat	aaa	gac	gag	atc	ttg	gcc	cta	cta	aaa	gcc	1872
103	GTA	пур	GIU	тте	гÀг	Asn	ràs	Asp	Glu	Ile	Leu	Ala	Leu	Leu	Lys	Ala	
104		PIO					615					620					
186	CLC	דבנ	ctg -	CCC	aaa	aga	ctt	agc	ata	atc	cat	tgt	CCC	ggg	ggt	caa	1920
18/	Leu	Phe	Leu	Pro	Lys	Arg	Leu	Ser	Ile	Ile	His	Cys	Pro	Gly	Gly	Gln	
188	625					630					635					640	•
190	aag -	gga	cac	agc	gcc	gag	gct	aga	ggc	aac	cgg	atg	gct	gac	caa	gcg	1968
191	Lys	GLy	His	Ser	Ala	Glu	Ala	Arg	Gly	Asn	Arg	Met	Ala	Asp	Gln	Āla	7, 7
192					645					650					655		

## RAW SEQUENCE LISTING

DATE: 09/08/2004 PATENT APPLICATION: US/10/827,498 TIME: 13:57:55

Input Set : N:\efs\10827498\AMBI1001.txt Output Set: N:\CRF4\09082004\J827498.raw

194 199 196	O AL	c cga a Arg	a aag g Lys	g gca s Ala 660	a Ala	ato Ile	aca Thr	gag Glu	act Thi	r Pro	a gad D Asl	c ac	c to r Se:	r Thi	Lei	c ctc ı Leu	2016
198 199 200	His	c cac s His	c cac s His	cac His	cac	cac His	taa	ι	001	,				670	)		2037
		LO> S	675 SEQ I		): 2												
204	4 <21	.1> I	LENGT	TH: 6	78												
			YPE:														
206	<21	.3> 0	ORGAN	IISM:	Mol	oney	mur	ine	sarc	oma	viru	ıs					
			EQUE			<b>~1.</b> ,	7	<b>a</b> 1	<b></b>		_						
211	. 1	. 1111	. цео	ASII	. 11e 5	GIU	Asp	Glu	Tyr		Let	ı His	s Glu	Thr		Lys	
		Pro	) Asp	Val	_	Len	Glv	Ser	Thr	10 Trn	La	. 501	- 7\ax	nh.	15	Gln	
215			1	20			O ₊ y	DCI	25	ırþ	, пес	ı sei	. Ast	) Pne 30	Pro	Gin	
218	Ala	Trp	Ala	Glu	Thr	Gly	Gly	Met		Leu	Ala	. Val	Arc	. Glm	Ala	Pro	
219	,		35					40					45				
223		50					55					60				Gln	
226	Tyr	Pro	Met	Ser	Gln	Glu	Ala	Arg	Leu	Gly	Ile	Lys	Pro	His	Ile	Gln	
221	65					70					75					80	
231	Arg	ьец	Leu	Asp	85	GIY	11e	Leu	Val		Cys	Gln	Ser	Pro		Asn	
		Pro	Leu	Len		Val	Luc	Lvc	Dro	90	mb so	7	70		95	_	
235				100	110	vai	цуз	пуъ	105	GIY	1111	ASI	Asp	1yr	Arg	Pro	
238	Val	Gln	Asp	Leu	Arg	Glu	Val	Asn		Arq	Vál	Glu	Asp	Tle	His	Pro	
239			115					120					125				
242	Thr	Val	Pro	Asn	Pro	Tyr	Asn	Leu	Leu	Ser	Gly	Leu	Pro	Pro	Ser	His	
243		130					135					140					
246	GIn 145	Trp	Tyr	Thr	Val	Leu	Asp	Leu	Lys	Asp	Ala	$\mathtt{Tyr}$	Phe	Cys	Leu	Arg	
			Pro	Thr	Cor	150	Dwo	T	D1	~ 7	155		_	_		160	
251	ac u	111.5	Pro	1111	165	GIII	PIO	ьеи	Рпе	170	Pne	Glu	Trp	Arg		Pro	
254	Glu	Met	Gly	Ile		Glv	Gln	Leu	Thr	Trn	Thr	Δra	T.e.ii	Dro	175	C1	
255				180					185					190			
258	Phe	Lys	Asn	Ser	Pro	Thr	Leu	Phe	Asp	Glu	Ala	Leu	His	Arg	asp	Leu	
259			195					200					205				
262	Ala	Asp	Phe	Arg	Ile	Gln	His	Pro	Asp	Leu	Ile	Leu	Leu	Gln	Tyr	Val	
263	7 an	210	T 0	T	T	7 T -	215		_			220					
267	225	Asp	Leu	Leu	ьeu	A1a 230	Ala	Thr	ser	Glu		Asp	Cys	Gln	Gln		
		Ara	Ala	Leu	Leu		Thr	T.A11	Gl ₃₇	λαη	235	al	m	7	77 -	240	
271		- <del></del> 3		204	245	J111	TIIT	⊔e.u	эту	250	ьеи	GIĀ	ryr	Arg		ser	
274	Ala	Lys	Lys	Ala		Ile	Cys	Gln	Lvs	Gln	Val	Lvs	Tvr	Len	255 Glv	Tur	
2/5				260					265					270			
278	Leu	Leu	Lys	Glu	Gly	Gln	Arg	Trp	Leu	Thr	Glu	Ala	Arg	Lys	Glu	Thr	
279			275					280					285				
282	۷al	Met	Gly	Gln	Pro			Lys	Thr	Pro	Arg		Leu	Arg	Glu	Phe	
283		290					295					300					

RAW SEQUENCE LISTING DATE: 09/08/2004 PATENT APPLICATION: US/10/827,498 TIME: 13:57:55

Input Set : N:\efs\10827498\AMBI1001.txt
Output Set: N:\CRF4\09082004\J827498.raw

286 Leu Gly Thr Ala Gly Phe Cys Arg Leu Trp Ile Pro Gly Phe Ala Glu 310 315 290 Met Ala Ala Pro Leu Tyr Pro Leu Thr Lys Thr Gly Thr Leu Phe Asn 325 330 294 Trp Gly Pro Asp Gln Gln Lys Ala Tyr Gln Glu Ile Lys Gln Ala Leu 340 345 298 Leu Thr Ala Pro Ala Leu Gly Leu Pro Asp Leu Thr Lys Pro Phe Glu 355 360 302 Leu Phe Val Asp Glu Lys Gln Gly Tyr Ala Lys Gly Val Leu Thr Gln 370 375 306 Lys Leu Gly Pro Trp Arg Arg Pro Val Ala Tyr Leu Ser Lys Lys Leu 307 385 390 395 310 Asp Pro Val Ala Ala Gly Trp Pro Pro Cys Leu Arg Met Val Ala Ala 405 410 314 Ile Ala Val Leu Thr Lys Asp Ala Gly Lys Leu Thr Met Gly Gln Pro 420 425 318 Leu Val Ile Leu Ala Pro His Ala Val Glu Ala Leu Val Lys Gln Pro 319 435 440 322 Pro Asp Arg Trp Leu Ser Asn Ala Arg Met Thr His Tyr Gln Ala Leu 323 450 455 460 326 Leu Leu Asp Thr Asp Arg Val Gln Phe Gly Pro Val Val Ala Leu Asn 470 475 330 Pro Ala Thr Leu Leu Pro Leu Pro Glu Glu Gly Leu Gln His Asn Cys 490 334 Leu Asp Ile Leu Ala Glu Ala His Gly Thr Arg Pro Asp Leu Thr Asp 500 505 338 Gln Pro Leu Pro Asp Ala Asp His Thr Trp Tyr Thr Asp Gly Ser Ser 339 515 520 342 Leu Leu Gln Glu Gly Gln Arg Lys Ala Gly Ala Ala Val Thr Thr Glu 535 540 346 Thr Glu Val Ile Trp Ala Lys Ala Leu Pro Ala Gly Thr Ser Ala Gln 347 545 550 555 350 Arg Ala Glu Leu Ile Ala Leu Thr Gln Ala Leu Lys Met Ala Glu Gly 565 570 354 Lys Lys Leu Asn Val Tyr Thr Asp Ser Arg Tyr Ala Phe Ala Thr Ala 580 585 358 His Ile His Gly Glu Ile Tyr Arg Arg Gly Leu Leu Thr Ser Glu 595 600 362 Gly Lys Glu Ile Lys Asn Lys Asp Glu Ile Leu Ala Leu Leu Lys Ala 615 366 Leu Phe Leu Pro Lys Arg Leu Ser Ile Ile His Cys Pro Gly Gly Gln 367 625 630 635 370 Lys Gly His Ser Ala Glu Ala Arg Gly Asn Arg Met Ala Asp Gln Ala 645 650 374 Ala Arg Lys Ala Ala Ile Thr Glu Thr Pro Asp Thr Ser Thr Leu Leu 660 665 378 His His His His His 379 675 382 <210> SEQ ID NO: 3

RAW SEQUENCE LISTING ERROR SUMMARY PATENT APPLICATION: US/10/827,498

DATE: 09/08/2004 TIME: 13:57:56

Input Set : N:\efs\10827498\AMBI1001.txt
Output Set: N:\CRF4\09082004\J827498.raw

## Invalid <213> Response:

Use of "Artificial" only as "<213> Organism" response is incomplete, per 1.823(b) of New Sequence Rules. Valid response is Artificial Sequence.

Seq#:3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/827,498

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DATE: 09/08/2004 TIME: 13:57:56

Input Set : N:\efs\10827498\AMBI1001.txt
Output Set: N:\CRF4\09082004\J827498.raw

L:13 M:271 C: Current Filing Date differs, Replaced Current Filing Date